

*Application No. 10/590,969*  
*Amendment dated January 14, 2011*  
*Reply to Office Action of October 14, 2010*

*Docket No. 2114-0117PUS1*  
*Art Unit: 1759*  
*Page 8 of 15*

**AMENDMENTS TO THE DRAWINGS**

Five sheets for Replacement Drawings have been added in order to illustrate high voltage-generating unit PU in FIG. 4, and to eliminate the non-English characters from the original drawings.

### **REMARKS**

The Applicant thanks the Examiner for the thorough consideration given the present application. Claims 1-19 are pending. Claim 1, 3, 4, and 7 are amended, and claims 15-19 are added. Claims 1, 16, and 18 are independent. The Examiner is respectfully requested to reconsider the rejections in view of the amendments and remarks set forth herein.

#### **Examiner Interview**

If, during further examination of the present application, any further discussion with the Applicant's Representative would advance the prosecution of the present application, the Examiner is encouraged to contact Carl T. Thomsen, at 1-703-208-4030 (direct line) at his convenience.

#### **Objection to the Drawings**

In response to the objection to the drawings, FIG. 4 has been revised to illustrate high voltage-generating unit PU. In addition, FIGS. 1-10 have been revised to eliminate the non-English wording from the original drawings. No new matter has been added.

#### **Claim for Priority**

It is respectfully requested that the Examiner acknowledge the Applicant's claim for foreign priority in the next official communication.

**Information Disclosure Citation**

The Applicant thanks the Examiner for considering the reference supplied with the Information Disclosure Statement filed on January 4, 2007, and for providing the Applicant with an initialed copy of the PTO/SB/08 form filed therewith.

**Amendments to the Specification**

Pages 7 and 15 of the specification have been amended to provide antecedent basis for the claimed subject matter. No new matter has been added.

**Restriction Requirement**

The Examiner has made the Restriction Requirement final, and has withdrawn claims 8-14 from further consideration. Inasmuch as claim 8-14 depend directly or indirectly from independent claim 1, it is respectfully requested that the Examiner rejoin and allow claims 8-14 upon allowance of independent claim 1.

**Rejections Under 35 U.S.C. §103(a)**

Claims 1-4 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over JP 2002-257785 in view of Yin et al., IEEE, 1999; and

claims 5 and 6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over JP 2002-257785 in view of Yin et al., IEEE, 1999, and further in view of Mosheli (U.S. 2001/0047760).

These rejections are respectfully traversed.

**Amendments to Independent Claims 1, 16, and 18**

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the present application, **independent claim 1** has been amended herein to recite a combination of elements directed to a microplasma jet generator, including *inter alia*

“wherein the micro-antenna has a flat meandering shape with plural turns extending in alternating directions.”

**Independent claim 16** has been added herein to recite a combination of elements directed to a microplasma jet generator, including *inter alia*

“wherein the micro-antenna has a flat undulating shape with plural turns.”

**Independent claim 18** has been added herein to recite a combination of elements directed to a microplasma jet generator, including *inter alia*

“wherein the substrate is made of one selected from the group consisting of sapphire, aluminum nitride, silicon nitride, boron nitride, and silicon carbide.”

The Applicant respectfully submits that the combination of elements as set forth in each of **independent claims 1, 16, and 18** is not disclosed or made obvious by any combination of the prior art of record, including **JP 2002-257785, Yin et al., IEEE, 1999, and Mosheli.**

The Examiner alleges that **JP 2002-257785** discloses a flat meandering shape with one turn. The Applicant respectfully disagrees.

As can be seen in the English translation of paragraph [0016] of **JP 2002-257785** below, this document merely discloses “an one-roll monotonous type antenna (3) with an inside diameter of 2 mm ...”

[0016] ... Then, invention of this application is taken as the inductive-coupling microplasma source part by VHF drive. For example, drawing 1 is a partial composition photograph of the flat surface which showed the example. For example, it can be considered as the discharge tube capillary tube (2) whose width and depth are 1-5 mm, and copper plating and a microplasma chip with an one-roll monotonous type antenna (3) with an inside diameter of 2 mm produced by photo lithography in the center of a chip (1) made from quartz of 30 mm squares.

Further, as can be seen in FIG. 1 of **JP 2002-257785**, antenna (3) has a U-shape with parallel sides having equal lengths.

The Applicant respectfully submits that the “one-roll monotonous type antenna (3) with an inside diameter of 2 mm,” and having a U-shape with parallel sides having equal lengths as disclosed in **JP 2002-257785**, does not teach or suggest either:

“a flat meandering shape with plural turns extending in alternating directions,” as set forth in **independent claim 1**, or

“wherein the micro-antenna has a flat undulating shape with plural turns,” as set forth in **independent claim 16**.

As can be seen in **Yin et al.**, this document merely discloses helical and spiral coils. See, for example,

- page 516, II Experiment, A. which merely discloses “a 20-turn coil wound around a 6mm Pyrex tube, and
- pages 1517 to 1518, Experiment B and C, Table 1, and FIGS. 2 and 3 which merely disclose spiral coils.

As best understood from a study of the Yin et al. document, this document discloses spiral couplers for generating uniform plasmas over large, planar areas where one wishes uniform generation over plasma extraction grids. By contrast the present invention is directed to a microplasma jet generator capable of stably generating a microplasma jet in a microspace. The microplasma generator of the present invention is not intended to generate plasma in large planar areas. (See FIG. 4 of the present invention, for example.)

**Mosheli** paragraph [0006] was cited in the rejection of dependent claims 5 and 6 merely to disclose an ICP source with spiral coils and a substrate formed on aluminum oxide (alumina).

As can be seen in the Oxford Advance Learner’s Dictionary, a “spiral shape is a shape consisting of a continuous curved line that winds around a central point, with each curve further away from the centre.”

Thus, the U-shaped coil and spiral coils disclosed in the cited references cannot be combined to teach or suggest:

“wherein the micro-antenna has a flat meandering shape with plural turns extending in alternating directions” (as in **independent claim 1**),

“wherein the micro-antenna has a flat undulating shape with plural turns” (as in **independent claim 16**), or

“wherein the substrate is made of one selected from the group consisting of sapphire, aluminum nitride, silicon nitride, boron nitride, and silicon carbide” (as in **independent claim 18**).

At least for the reasons explained above, the Applicant respectfully submits that the combination of elements as set forth in each of **independent claims 1, 16, and 18** is not disclosed or made obvious by any combination of the prior art of record, including **JP 2002-257785, Yin et al., IEEE, 1999, and Mosheli**.

Therefore, **independent claims 1, 16, and 18** are in condition for allowance.

#### **Dependent Claims**

The Examiner will note that dependent claims 3, 4, and 7 have been amended, and that dependent claims 15, 17, and 19 have been added to set forth additional novel features of the invention.

All dependent claims are in condition for allowance due to their dependency from allowable independent claims, or due to the additional novel features set forth therein.

All pending claims are now in condition for allowance.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §103(a) are respectfully requested.

**CONCLUSION**

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

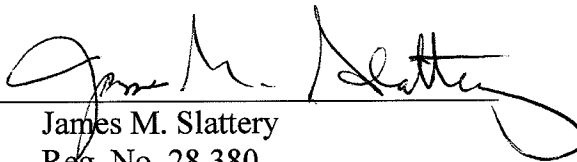
If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone Carl T. Thomsen (Reg. No. 50,786) at (703) 208-4030(direct line).

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

**Date: January 14, 2011**

By

  
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Attachment: Five sheets of Replacement Drawings (FIGS. 1-10).